

What is claimed is:

1 1. A composite comprising:

2 a dielectric matrix; and

3 nano magnetic particles contained in the matrix.

1 2. The composite according to claim 1, wherein the nano magnetic

2 particles are non-spherical.

1 3. The composite according to claim 2, wherein spherical nano magnetic

2 particles are added to the non-spherical nano magnetic particles.

1 4. The composite according to claim 1, wherein the nano magnetic

2 particles are spherical.

1 5. The composite according to claim 1, wherein the matrix is made of one

2 selected from the group consisting of silica, alumina and hydrosilsesquioxane.

1 6. The composite according to claim 1, wherein the matrix is made of one

2 selected from the group consisting of polyimide, PMMA and methyl silsesquioxane.

1 7. The composite according to claim 1, wherein the nano magnetic

2 particles are superparamagnetic.

1 8. The composite according to claim 7, wherein diamagnetic nano

2 magnetic particles are added to the superparamagnetic nano particles.

1 9. The composite according to claim 8, wherein the diamagnetic nano

2 particles include indium (In).

1 10. The composite according to claim 1, wherein the nano magnetic

2 particles are diamagnetic.

1 11. The composite according to claim 1, wherein the nano magnetic
2 particles consists of (γ -Fe₂O₃), chromium oxide (CrO₂), europium oxide (EuO), NiZn-
3 ferrite, MnZn-ferrite or Yttrium-iron garnet.

1 12. The composite according to claim 2, wherein the nano magnetic
2 particles include indium.

1 13. A semiconductor device comprising:
2 a semiconductor substrate; and
3 an insulator made of a composite having a dielectric matrix, and nano
4 magnetic particles contained in the matrix.

1 14. The semiconductor device according to claim 13, wherein the nano
2 magnetic particles are non-spherical.

1 15. The semiconductor device according to claim 13, wherein the nano
2 magnetic particles are spherical.

1 16. The semiconductor device according to claim 13, wherein the nano
2 magnetic particles are superparamagnetic.

1 17. The semiconductor device according to claim 15, wherein diamagnetic
2 nano magnetic particles are added to the superparamagnetic nano particles.

1 18. An optical device comprising:
2 a transparent dielectric matrix; and
3 a composite having nano magnetic particles contained in the matrix.

1 19. The optical device according to claim 18, wherein the nano magnetic
2 particles are non-spherical.

1 20. The optical device according to claim 18, wherein the nano magnetic
2 particles are spherical.

1 21. A method for manufacturing a composite comprising the steps of:
2 forming nano magnetic particles; and
3 distributing the nano magnetic particles into a dielectric matrix.

1 22. The method according to claim 21, wherein the step of forming nano
2 magnetic particles includes the steps of mixing a cation surfactant with an anion
3 surfactant of a metal salt and subjecting the mixture to chemical sedimentation to
4 form non-spherical nano magnetic particles.